

IN THE CLAIMS

CLAIM 1 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polymers with interstitial regions therebetween;

wherein said polymers are selected from the group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer;

said interstitial regions between said crystallites comprising amorphous material comprising an additive;

said additive provides mobility to said polymer to allow said polymer to associate with one another to achieve said crystallites;

said polycrystalline material is characterized by a degree of crystallinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[.] ; and

wherein said additive is a plasticizer selected from the group consisting of:

Adipic acid derivatives

Sebacic acid derivatives

Azelaic acid derivatives

Stearic acid derivatives

Benzoic acid derivatives

Diethyl succinate

Citric acid derivatives

N-Ethyl o,p-tolusnesulfonamide

Dimer acid derivatives

o,p-toluenesulfonanamide

Epoxy derivatives

Terpentines

Fumaric acid derivatives

Terpentine derivatives

Glycerol triacetate

Siloxanes

Isobutyrate derivatives
Isophthalic acid derivatives
Lauric acid derivatives
Linoleic acid derivative
Maleic acid derivative
Mellitates
Myristic acid derivatives
Oleic acid derivatives
Palmitic acid derivatives
Paraffin derivatives
Phosphoric acid derivatives
Phthalic acid derivatives
Ricinoleic acid derivatives

Polysiloxanes
Ethylene glycols
Polyethylene glycols
Polyesters
Sucrose derivatives
Tartaric acid derivative
Terephthalic acid derivative
Trimellitic acid derivatives
Glycol derivatives
Glycolates
Hydrogenated terphenyls HB-40
poly(alkyl naphthalene)s Paraflex
aliphatic aromatics Leromoll
chlorinated paraffin (52 wt % Cl),
Ceraclor S-52
Phosphonic acid derivatives
Polysilanes

CLAIM 2 (Original) A structure according to claim 1, wherein said structure is electrically conductive and has an isotropic electrical conductivity.

CLAIM 3 (Previously Presented) A structure according to claim 1, wherein said additive is a plasticizer.

CLAIM 4 (Cancel)

CLAIM 5 (Original) A structure according to claim 1, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylene vinylenes, polyparaphenylenes, polyanilines, polythiophenes, polyazazines, polyfuranes, polypyrrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from

soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

CLAIM 6 (Original) A structure according to claim 1, wherein said structure has crystallinity greater than about 25%.

CLAIM 7 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polymers with interstitial regions therebetween;

said polymer is selected from the group consisting of a precursors to an electrically conductive polymer and an electrically conductive polymer;

said interstitial regions comprise an amorphous material selected from the group consisting of said polymers;

said amorphous material includes an additive;

said polycrystalline material is characterized by a degree of crystallinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[[.]] :and

wherein said additive is a plasticizer selected from the group consisting of:

Adipic acid derivatives

Sebacic acid derivatives

Azelaic acid derivatives

Stearic acid derivatives

Benzoic acid derivatives

Diethyl succinate

Citric acid derivatives

N-Ethyl o,p-tolusnesulfonamide

Dimer acid derivatives

o,p-toluenesulfonanamide

Epoxy derivatives
Fumaric acid derivatives
Glycerol triacetate
Isobutyrate derivatives
Isophthalic acid derivatives
Lauric acid derivatives
Linoleic acid derivative
Maleic acid derivative
Mellitates
Myristic acid derivatives
Oleic acid derivatives
Palmitic acid derivatives
Paraffin derivatives
Phosphoric acid derivatives
Phthalic acid derivatives
Ricinoleic acid derivatives

Terpenes
Terpentine derivatives
Siloxanes
Polysiloxanes
Ethylene glycols
Polyethylene glycols
Polyesters
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Trimellitic acid derivatives
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Hydrogenated terphenyls HB-40
poly(alkyl naphthalene)s Paraflex
aliphatic aromatics Leromoll
chlorinated paraffin (52 wt % Cl),
Ceraclor S-52
Phosphonic acid derivatives
Polysilanes

CLAIM 8 (Original) A structure according to claim 7, wherein said polymer is an electrically conductive polymer and said polycrystalline material has a conductivity which is isotropic.

CLAIM 9 (Original) A structure according to claim 7, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylenes, vinylenes, polythianaphthenes, polyparaphenylenes, polyanilines, polythiophenes, polyazines, polyfuranes, polypyrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

CLAIM 10 (Cancel)

CLAIM 11 (Original) A structure comprising a polyaniline material having a plurality of crystal grains, said material having isotropic electrical conductivity.

CLAIM 12 (Original) A structure according to claim 1, wherein the amount of said additive is adjustable.

CLAIM 13 (Original) A structure according to claim 12, wherein said amount is controlled to modify physical properties of said structure.

CLAIM 14 (Original) A structure according to claim 13, wherein said physical properties are selected from the group consisting of glass transition temperature, compliance, thermal coefficient of expansion, modulus, yield and tensile strength, hardness, density.

CLAIM 15 (Original) A structure according to claim 1, wherein said crystallites have a size greater than about 80Å.

CLAIM 16 (Original) A structure according to claim 11, wherein said grains are greater than about 80Å.

CLAIM 17 (Original) A structure according to claim 7, wherein said crystallites have a size greater than about 80Å.

CLAIM 18 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polyaniline with interstitial regions therebetween;

said polyaniline is selected from the group consisting of a precursors to an electrically conductive polyaniline and an electrically conductive polyaniline;

said interstitial regions comprise an amorphous material selected from the group consisting of polyaniline;

said amorphous material includes an additive in an amount from about 0.001% to about 90% by weight;

said additive is selected from the group consisting of poly-co-dimethylaminopropyl siloxane, poly (ethylene glycol) tetrahydro furfuryl ether, glycerol triacetate and epoxidized soy bean oil;

said polycrystalline material is characterized by a degree of crystallinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[[.]] :and

wherein said additive is a plasticizer selected from the group consisting of:

<u>Adipic acid derivatives</u>	<u>Sebacic acid derivatives</u>
<u>Azelaic acid derivatives</u>	<u>Stearic acid derivatives</u>
<u>Benzoic acid derivatives</u>	<u>Diethyl succinate</u>
<u>Citric acid derivatives</u>	<u>N-Ethyl o,p-toluenesulfonamide</u>
<u>Dimer acid derivatives</u>	<u>o,p-toluenesulfonamide</u>
<u>Epoxy derivatives</u>	<u>Terpenes</u>
<u>Fumaric acid derivatives</u>	<u>Terpentine derivatives</u>
<u>Glycerol triacetate</u>	<u>Siloxanes</u>
<u>Isobutyrate derivatives</u>	<u>Polysiloxanes</u>
<u>Isophthalic acid derivatives</u>	<u>Ethylene glycols</u>
<u>Lauric acid derivatives</u>	<u>Polyethylene glycols</u>
<u>Linoleic acid derivative</u>	<u>Polyesters</u>
<u>Maleic acid derivative</u>	<u>Sucrose derivatives</u>
<u>Mellitates</u>	<u>Tartaric acid derivative</u>

Myristic acid derivatives
Oleic acid derivatives
Palmitic acid derivatives
Paraffin derivatives
Phosphoric acid derivatives
Phthalic acid derivatives
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Terephthalic acid derivative
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Glycol derivatives
Glycolates
Hydrogenated terphenyls HB-40
poly(alkyl naphthalene)s Paraflex
aliphatic aromatics Leromol
chlorinated paraffin (52 wt % Cl),
Ceraclor S-52
Phosphonic acid derivatives
Polysilanes

CLAIM 19 (Original) A structure according to claim 1, wherein the amorphous material in the interstitial regions contains crosslinks.

CLAIM 20 (Original) A structure according to claim 1, wherein the amorphous material in the interstitial regions are deaggregated.

CLAIM 21 (Previously Presented) A structure according to claim 1, wherein the additive is in an amount for about 0.001% to about 90% by weight.

CLAIM 22 (Original) A structure according to claim 1, wherein said structure is selected from the group consisting of an electrostatic discharge layer, is a wire, is a solder, is an electromagnetic interference shield, is a semiconductor device, and a corrosion protection coating.

CLAIM 23 (Previously Presented) A structure according to claim 1, wherein said amorphous regions have crystalline order.

CLAIM 24 (Previously Presented) A structure according to claim 1, wherein said additive has a different material composition from said polycrystalline material.